



# Southwest Center for Agricultural Health, Injury Prevention and Education

## **Summary Annual Report**

**September 30, 2012-September 29, 2013**

**CDC/NIOSH Cooperative Agreement 2U50H007541-12**

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**February 2014**



## SECTION 1

### **Center Summary**

The Southwest Center for Agricultural Health, Injury Prevention and Education (SW Ag Center) is a well-established center based at the University of Texas Health Northeast in Tyler, Texas. The SW Ag Center serves Public Health Region VI which includes Arkansas, Louisiana, New Mexico, Oklahoma and Texas. The mission of the SW Ag Center is to *improve the safety and health of agricultural, forestry and fishing (AFF) workers*. This is accomplished through an integrated program of research, intervention, education and outreach activities that engage and leverage a network of strategic partners who represent the interests of a diverse worker population and a wide range of agricultural production in the region. Similarly, the Center's scope of work is organized around the theme "Building Strategic Partnerships to Improve Agricultural, Forestry, and Fishing Worker Safety and Health". Four research projects are funded through the Center. Projects address (1) organic dust induced inflammatory responses in the lung; (2) neuromotor function and acute injury among adolescent Hispanic farmworkers; (3) social marketing to promote adoption of safe work practices among Vietnamese commercial fishermen in the Gulf of Mexico; and (4) respirator use among poultry house workers. The Center's feasibility program augments the research projects, supports mentorship relationships between senior and junior researchers and is responsive to emerging issues within AFF in the region. Six diverse feasibility studies were awarded to investigators from across the region in year two of this funding cycle. Outreach activities for year two include the creation and dissemination of safety products and messages to partners and focused initiatives within high risk areas including tractors, machinery, livestock, and heat related illnesses. Cross-center collaborations were strengthened through participation in the creation of a joint YouTube channel and through discussions related to evaluation. The Center evaluation program uses logic models, bi-annual progress charts and social network data to assess goal attainment and network growth.

### **Relevance**

The SW Ag Center is uniquely positioned to address farming, ranching, commercial fishing, forestry and logging occupational safety and health within its service region through research projects, feasibility studies and outreach activities. The SW Ag Center has two funded projects related to poultry production, a substantial operation within the region. One project will help us understand how the lungs respond to organic dust and the other will educate poultry workers on use of appropriate personal protective equipment. Research projects also specifically address diverse regional worker groups, including Vietnamese fishermen and adolescent Hispanic farmworkers. The Center has a record of success working with special populations and producing culturally appropriate



interventions in the language of the audience. Read more about the currently funded projects at <http://www.swagcenter.org/projectscurrent.asp>.

Feasibility studies allow the Center to investigate emerging issues or gaps in research or data. Feasibility studies awarded in year one explored secondary data sources for logging worker injuries and fatalities and gathered primary data on logging worker risks. Year two studies address a wide variety of topics including: tractor seating for paraplegia, work-life characteristics of South Texas agricultural workers, organic farming risks in New Mexico, grain entrapment, youth development outcomes, and inflammatory agents in agricultural dust. Principal investigators from these studies are located in Oklahoma, New Mexico and Texas. Information about past and current feasibility studies is available at <http://www.swagcenter.org/projectsfeasibility.asp>.

Outreach activities serve occupational safety and health across the broad industry through monthly safety messages delivered to 1200-2000 producers, educators and scientists; heat illness prevention education; tractor safety workshops; and livestock safety presentations (<http://www.swagcenter.org/resourcesmonthlyblasts.asp>). Monthly blasts are regularly reprinted in trade publications like the Texas Logger or sent to industry list serves (Arkansas Ag Science Teachers, Louisiana Extension) or shared on Facebook. The outreach program hosted three tractor and machinery safety workshops in year two. The tractor and machinery safety curriculum was also adapted to address new farmers and ranchers and the information was incorporated into a Beginning Farmer and Rancher Education Series offered through AgriLife Extension. Additionally, the SW Ag Center initiated a project adopted by all ten Ag Centers to create a joint YouTube channel in order to respond to advances in technology and the growing popularity of social media among AFF producers and educators (<http://www.youtube.com/user/USagCenters>). Evaluation data for research projects, feasibility studies and outreach initiatives are collected to record current work and lead future action.

## **Key Personnel**

**Changes in Key Personnel:** Vanessa Casanova, Ph.D., assumed the role of Applied Research Manager for the SW Ag Center and Assistant Professor of Occupational Health Sciences at The University of Texas Health Northeast in Tyler in June 2013. She is a graduate of the University of Alabama and Auburn University. Dr. Casanova is a rural sociologist with extensive research experience with migrant and immigrant workers in the southeastern forest industry where she conducted work with H2-B guest workers in forest management occupations. Her research interests include the health and safety of vulnerable workers in natural resource related occupations and the organization of work in agriculture and forestry.



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Learn more about the SW Ag Center faculty, staff, principal investigators and advisors at <http://www.swagcenter.org/aboutpeople.asp>.

**Ag Center web link:** [www.swagcenter.org](http://www.swagcenter.org); Facebook: [www.facebook.com/swagcenter](https://www.facebook.com/swagcenter)

## SECTION II

### Center Cores

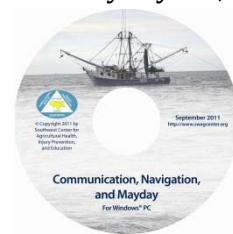
#### **Administrative and Planning Core**

Faculty, staff, principal investigators and advisors collaborated to revise the Center's strategic plan. The team performed a SWAT Analysis and developed goals using the SMART system (specific, measureable, attainable, realistic and timely). Feedback was received during the March 2013 board meeting and a final version was distributed in April. The revised plan contains four strategic goals and numerous intermediate goals and actions items. You can access the strategic plan at <http://www.swagcenter.org/aboutstratplan.asp>.

The Center received supplemental funding to expand distribution of two products produced through previously funded research projects: (1) the FRESCO Toolkit and (2) the Communication, Navigation and Mayday CD. The FRESCO toolkit focuses on heat illness

prevention and includes a photonovela and flipchart. Promotores were trained to use the FRESCO materials during an intensive workshop at the 2012 Midwest Stream Farmworker Health Forum. The Center is working with the National Center for Farmworker Health to collect evaluation information from the promotores and health clinics. The Communication, Navigation and Mayday CD is an interactive, trilingual (English, Vietnamese and Spanish) tool to improve safety knowledge and behavior among commercial fishing vessel operators. The CD was promoted at the Brownsville Industry Day, Texas Shrimp Association Meeting and the Commercial Fishing Vessel Safety Advisory Committee Meeting (CFVSAC) in Washington, D.C. At the CFVSAC Meeting, Troy Rentz, US Coast Guard Thirteenth District, said, "I was pleased to see the Fishing Vessel Safety Project concentrated on communications and Rule 5. It seemed that the lack of communications and the failure to keep a proper look-out contributed to nearly every collision involving a commercial fishing vessel that I investigated in that area. I'm also pleased to see materials relate to the people who own and operate commercial fishing vessels in the Gulf of Mexico. The project produced some great tools, I know if they are widely used by the CFV (Commercial Fishing Vessel) operators it will certainly reduce the number of serious collisions." The expressed demand for the Communication, Navigation and Mayday CD, along with feedback like the quote included here, represents important intermediate outcomes for the SW Ag Center.

Communication, Navigation and Mayday CDs are available for free from the SW Ag Center. Contact Nickie Warren at 903-877-5621 or by email to [Nickie.Warren@uthct.edu](mailto:Nickie.Warren@uthct.edu) for more information.



## **Feasibility/Pilot Studies Program and Emerging Issues Core**

The SW Ag Center staff engaged in face-to-face meetings in Oklahoma and Arkansas to promote the feasibility studies program. This personal interaction proved to be an effective tool for recruiting principal investigators and enhancing the visibility of the SW Ag Center. The meeting with faculty at Oklahoma State University in mid-June produced two feasibility study applications for the July 31<sup>st</sup> deadline. During the August 1<sup>st</sup> meeting at the University of Arkansas, faculty expressed great interest in the program and we expect to see applications for the April 2014 deadline. Additional face-to-face meetings have been arranged with agricultural-focused departments around the region to promote the feasibility studies program, grow the Center's academic network, identify potential investigators for future competitive applications and identify emerging issues. Due to the increased interest in the feasibility studies program, the Center revised the application and review processes. Applications are now accepted once a year on April 30th with a start

date of October 1<sup>st</sup>. Reviewers are now provided, not only with a scoring table, but also with Center goals and priorities for the feasibility studies program. Special information is provided to the applicant and reviewer regarding the mandatory mentorship component of the application. For more information, visit <http://www.swagcenter.org/opportunitiesfeasibilities.asp>. Contact Vanessa Casanova, PhD at 903-877-5896 or by email to [Vanessa.Casanova@uthct.edu](mailto:Vanessa.Casanova@uthct.edu) to schedule a presentation for your faculty.

Two feasibility studies focused in the logging industry performed the majority of their work in year two. Hasanat Alamgir, PhD, explored secondary data sources for logging worker injuries and fatalities and Dave Douphrate, PhD, gathered primary data on logging worker risks. As a result of his study, Dr. Alamgir produced a comprehensive report on logging workers' health and safety issues in Arkansas, Louisiana and Texas. He also wrote a manuscript that has been preliminarily accepted for inclusion in the Journal of Agromedicine.

The feasibility studies program received additional funds in 2013 enabling the Center to award 6 additional projects that address a variety of issues from across the region. Newly funded studies will (1) examine tractor seating alternatives for operators with paraplegia; (2) capture work-life characteristics of South Texas agricultural workers through a clinic-based database; (3) identify and typify health and safety risks in NM organic farming; (4) measure the forces experienced by the body during grain entrapment; (5) determine whether youth development outcomes vary by their exposure to farm work; and (6) identify inflammatory agents in agricultural dust. Read more about past and current feasibility studies at <http://www.swagcenter.org/projectsfeasibility.asp>.

## Outreach Program Core

The Center worked with an experienced Master Trainer for Tractor Safety to adapt an existing tractor and machinery operation curriculum for new landowners, a growing population across the region. The curriculum was used in Harris County, Texas during a weekend clinic organized by the county extension office. In addition, the Center certified 8 new Master Trainers and 2 Community Lead Instructors in Oklahoma in tractor







safety using the National Safe Tractor and Machinery Operation Program. To coordinate a tractor workshop in your area, contact Amanda Wickman at 903-877-5998 or by email to [Amanda.Wickman@uthct.edu](mailto:Amanda.Wickman@uthct.edu).

The best agricultural safety videos are now available on the U.S. Agricultural Safety and Health Centers' YouTube channel, <http://www.youtube.com/user/USagCenters>. The SW Ag Center worked with representatives from each of the other nine Ag Centers to develop a joint YouTube channel. Now, extension agents, ag science teachers, producers, first responders and farm families have a one stop shop for agricultural safety and health videos. Our Center contributed by developing and managing the review process for videos to be approved for the site and providing feedback on the submission forms and site graphics. The site went live on November 1, 2013 and includes several videos produced by the SW Ag Center.

Other resources available through the Center include:

- Educational Materials, <http://www.swagcenter.org/resourcesvideos.asp>
- Monthly Safety Blasts, <http://www.swagcenter.org/resourcesmonthlyblasts.asp>
- Cultivation Newsletters, <http://www.swagcenter.org/resourcesnewsletters.asp>

## **Evaluation Program Core**

The evaluation program has developed two new and innovative evaluation instruments/tools for the collection of information for the SW Ag Center. These tools were developed to improve the ways in which the SW Ag Center can consider its impact and value to NIOSH, other Ag Centers, ERCs, producers and other industry stakeholders. These evaluation instruments can be tailored to meet the needs of diverse stakeholders. The first, the process evaluation form, provides research PIs and directors of administrative cores with a simple reporting tool to link the proposed activities in their logic model (plans) with the actual activities that have been implemented. The second tool is a social network survey, which identifies the work network of the SW Ag Center and assesses the degree to which the Center is accomplishing its stated goals.

## **Research Projects**

### **Poultry Dust Exposure and Lung Inflammation**

PI: Vijay Boggaram, PhD

Host Institution: UT Health Science Center at Tyler

In year two, the project found that poultry dust extract increases reactive oxygen species (ROS) production in lung epithelial cells to cause oxidant stress. Our studies also indicated

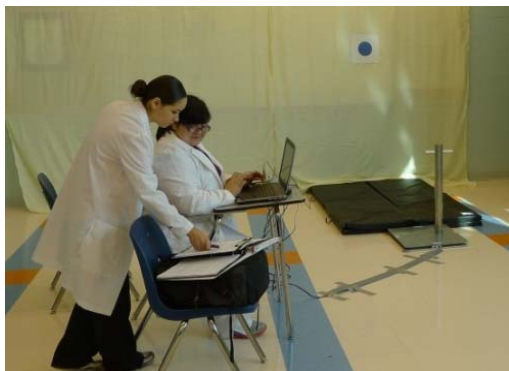
that oxidant stress is a key player in the induction of IL-8 levels by dust extract. These data imply that cellular oxidant stress may be an important contributing factor for the development of respiratory symptoms and respiratory diseases in workers exposed to agricultural dust, in particular, poultry dust.

## **Neuromotor Function and Work Injury Risk Among Hispanic Adolescent Farmworkers**

PI: Eva Shipp, PhD

Host Institution: Texas A&M School of Rural Public Health

During the current reporting period, the post-migration pilot data was collected and the postural sway data was analyzed. Preliminary findings show that low levels of exposure to pesticides or other chemicals related to farm work may increase the risk of injury among farmworkers by negatively impacting their motor function. The research participants included 34 high school students; half participated in migrant farm work during the last 12 months and 53% were male. Participants were in grades 9-12.



This project uses a postural sway test to measure gross motor function and balance. These are measured by capturing sway area and length on a balance board. Our research showed that there were no differences in sway area or length by gender. However, research revealed that the sway area and length were increased among farmworkers (particularly cotton workers) and injured farmworkers under the test condition with eyes closed and standing on foam. Similar, but smaller increases in sway length were observed among

cotton workers and injured workers. Similar increases in sway area and length under this test condition have been documented among those with neurotoxic exposures such as pesticide applicators and children exposed to lead. The potential association between larger sway area and length among cotton workers is biologically possible given that cotton crops may involve more potent chemicals compared to food crops.

## **Intervention Project**

### **Marketing Safety and Health Among Vietnamese Commercial Fishermen**

PI: Ann Carruth, DSN, RN

Host Institution: Southeastern Louisiana University

To date, the extent to which various social and environmental influences impact safety behavior among Vietnamese shrimpers remains largely unknown. This project created the Vietnamese Shrimper Community Baseline Assessment to collect information related to (1)



demographics; (2) work history and risks associated with work; (3) risk behaviors; (4) interpersonal and broader social network communication channels; (5) economic impact associated with potential exposure pathways from the Deep Horizon BP Oil spill disaster; (6) vessel safety culture and (7) behavior readiness for risk mitigation adoption.

A total of 339 survey responses were analyzed. The majority of survey respondents were male, married with children and live in Louisiana. Years living in America ranged from 3 to 63 years. Respondents ranged from 19 to 80 years of age. More than 30% had less than a 6<sup>th</sup> grade education, and 48% reported that they did not read and write



English very well. Respondents have been shrimping in America from 1 to 41 years, and 35% shrimped in Vietnam. Of those who have children, 24% reported that their children also shrimp. The majority of respondents shrimp either in the Gulf or both the Gulf and the Bay. Almost half of respondents (49%) were captains of their boats. Most reported working on boats with 3-4 people. The top five worries reported were: making money, getting caught in/hit by the winch, having an accident, slipping/falling, and knowing what to do in an emergency. Over half (52%) reported being really worried about being washed overboard or falling overboard. Bad weather, working alone, and transferring boats were the top three reasons reported when it is important to wear a life jacket. Over 90% reported that a life jacket which does not get in the way or that fits would help them wear life jackets more often.

A formal focus group guide was developed with 12 key topic areas. Participants were a diverse mix of owners, captains, and deckhands aged from 18-years old to over 70-years old. The majority of participants was male and had been shrimping in America between 10-50 years. Each of the sessions was primarily facilitated in Vietnamese.

## **Education Projects**

### **Education Approach to Increase Respirator Use Among Broiler Chicken Workers**

PI: Matt Nonnenmann, PhD, CIH

Host Institution: The University of Iowa

Dr. Nonnenmann recently presented at 2013 Texas Broiler Chicken Symposium in Center, TX. He described the project, what data has been collected by the project to date and future directions. The presentation generated enthusiasm that led to further discussion and



collaboration. The industry expressed interest in developing solutions to reduce dust generation for both production and environmental reasons. Access to broiler growers is largely controlled by the integrator companies. Working with integrator companies to design controls is important and can have a large impact as integrator companies mandate changes in production and building design. Therefore, as business sensitive air quality solutions are discovered and developed, disseminating these air quality solutions across farms can be easily accomplished through contractual relationships between integrators and broiler chicken growers. Personal contacts, such as those established at the symposium, are crucial to this project's success.